

CLAIMS

What is claimed is:

1. A method for manufacturing a heat sink comprising:

heating a metal base to melt solder in grooves formed in said base, said base having a first coefficient of thermal expansion, said solder having a second coefficient of thermal expansion lower than said first coefficient of thermal expansion;

positioning fins in said grooves, said fins having said first coefficient of thermal expansion;

cooling said metal base and said solder, said metal base experiencing tensile stresses and said solder experiencing compressive stresses to form a concavity in a thermal face of said base;

planing said thermal face;

wherein said tensile stresses and said compressive stresses reduce such that said thermal face is convex.

2. The method of claim 1 wherein:

said first coefficient of thermal expansion is about 17 ppm/C and said second coefficient of thermal expansion is about 15 ppm/C.

3. The method of claim 1 wherein:

said base and said fins are made from the same material.

4. The method of claim 3 wherein:

said base and said fins are copper.

5. The method of claim 1 wherein:

said base is copper and said solder is 90In-10Ag solder.

6. The method of claim 1 wherein:

said base is copper and said solder is Sn-Bi solder.

7. The method of claim 1 further comprising:

installing fasteners around a periphery of said base for securing said base to a surface.

8. A heat sink comprising:

a metal base having a first coefficient of thermal expansion, said base having a thermal face for contacting a surface from which heat is to be conducted;

a plurality of grooves formed in said base;

a plurality of fins positioned in said grooves, said fins having said first coefficient of thermal expansion;

said fins secured to said base with solder, said solder having a second coefficient of thermal expansion lower than said first coefficient of thermal expansion so that said thermal face is convex.

9. The heat sink of claim 8 wherein:

said first coefficient of thermal expansion is about 17 ppm/C and said second coefficient of thermal expansion is about 15 ppm/C.

10. The heat sink of claim 8 wherein:

said base is copper and said solder is 90In-10Ag solder.

11. The heat sink of claim 8 wherein:

said base is copper and said solder is Sn-Bi solder.

12. The heat sink of claim 8 wherein:

said fins are copper.

13. The heat sink of claim 8 further comprising:

fasteners around a periphery of said base for securing said base to a surface.